

What is claimed is:

1. A multicasting apparatus in a shared memory switch, comprising:

5 an input subqueue reading means for reading out data inputted thereto, selecting one bit from an output port bitmap at a time and outputting output port information of one bit and class information as a data stream together with an enable signal, wherein when ready data is presented in the input subqueue, the input subqueue reading means also reads out the input subqueue prior to the completion of all data processing and continuously sustains its output data stream;

10 a queue number encoding means for encoding the bitmap type of output port information provided thereto from the input subqueue reading means, creating a queue number of the output subqueues based on the encoded output port information and the class information and outputting the same together with an enable signal; and

15 an output subqueue writing means for writing an assigned non-use address of the output subqueues in a tail address of corresponding output subqueue, responsive to the information from the input subqueue reading means and replacing a subsequent tail address of the corresponding output subqueue with a newly assigned non-use address, thereby writing a 20 corresponding pointer in the corresponding output subqueue.

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2. The apparatus of claim 1, wherein the input subqueue

reading means includes:

a controller for controlling a movement and selection of
data;

5 a first register for latching and storing therein the
sub-cell data of the input subqueue;

a first calculating means for calculating a next value
(waiting value) in a second register;

10 the second register for holding a waiting sub-cell data
which is not being currently processed responsive to a control
signal including a latch enable signal and a data selection
signal from the controller;

a second calculation means for calculating a next value
(remaining value) in a third register;

15 the third register for holding data, which is in process,
and have bits not yet selected, responsive to the control
signal from the controller;

a third calculation means for calculating a next value
(selected value) in a fourth register; and

20 the fourth register for latching one bit at a time based
on the control signal from the controller.

3. The apparatus of claim 1, wherein the pointer
indicating an address in which data is stored, is first stored
and forwarded to the output subqueue based on the output port
25 bitmap and the class of the read data wherein when the data is
multicast data, the same pointer is duplicated to be forwarded
to a plurality of output subqueues.

4. The apparatus of claim 3, when the pointer is forwarded from the input subqueue to the corresponding output subqueue, selecting one bit for the data read out of the input subqueue at a time creates a bitmap stream selected only one
5 bit, wherein in case ready data is presented in the input subqueue, the data stored in the input subqueue is read out before being processed all data, thereby preventing a waiting time between data of the input subqueue from being occurred.

10 5. A multicasting method in a shared memory switch,
comprising the following steps of:

15 (a) storing a pointer indicating an address in which data is stored in an input subqueue and forwarding the same to an output subqueue based on an output port bitmap and a class of the data, wherein when the data is multicast data, the same pointer is duplicated to be forwarded to a plurality of output subqueues; and

20 (b) selecting one bit for the data read out of the input subqueue at a time to create a bitmap stream selected only one bit, when the pointer is forwarded from the input subqueue to the corresponding output subqueue, wherein in case ready data is presented in the input subqueue, the data stored in the input subqueue is read out before being processed all data, thereby preventing a waiting time between data of the input
25 subqueue from being occurred.

6. A multicasting method in a shared memory switch,

wherein a final number by which each address is to be read out
for multicasting is stored the addresses of a first
predetermined memory; a number reading out a corresponding
address at a time is stored in a second predetermined memory
5 distinct from the first predetermined memory, allowing a read
value to be increased at each instant of the reading of the
corresponding address of the shared memory, wherein the
increased value is compared with the final number; if the
increased value is less than the final number, the increased
10 value is increased by one; and if the increased value is equal
to the final number, the increased value is set to be zero, to
thereby allowing the address of the shared memory to be
returned to an unused address list.

7. The method of claim 6, wherein the reading and
writing processes is performed by a sequence of reading,
latching, modifying and writing; the consistency of the read
and write addresses allows the writing to be canceled; when
the writing is canceled by a blocking, write data is back to a
20 previous stage to allow it to be used in lieu of the read
data; and when there is data not yet used by a processing
delay and it is read out, an actual read number is added to
the number of read processes, resulting in a correct writing.

25 8. The method of claim 7, wherein when the reading and
writing processes are performed at the same address to cause
the writing to be blocked, a blocked write value is used in

lieu of the actual read value by performing a delay of at least two clocks and using a delayed information.

9. The method of claim 8, wherein when the actual read data is not available, the blocked write value is added to an unused value reset to be zero during the delay or multiplexed with the unused value, thereby allowing it to be canceled.

10. A computer-readable medium storing a program for implementing the following functions of:

(a) storing a pointer indicating an address in which data is stored in an input subqueue and forwarding the same to an output subqueue based on an output port bitmap and a class of the data, wherein when the data is multicast data, the same pointer is duplicated to be forwarded to a plurality of output subqueues; and

(b) selecting one bit for the data read out of the input subqueue at a time to create a bitmap stream selected only one bit, when the pointer is forwarded from the input subqueue to the corresponding output subqueue, wherein in case ready data is presented in the input subqueue, the data stored in the input subqueue is read out before being processed all data, thereby preventing a waiting time between data of the input subqueue from being occurred.

11. A computer-readable medium storing a program for implementing a function in which a final number by which each

address is to be read out for multicasting is stored the addresses of a first predetermined memory; a number reading out a corresponding address at a time is stored in a second predetermined memory distinct from the first predetermined
5 memory, allowing a read value to be increased at each instant of the reading of the corresponding address of the shared memory, wherein the increased value is compared with the final number; if the increased value is less than the final number, the increased value is increased by one; and if the increased value is equal to the final number, the increased value is set to be zero, to thereby allowing the address of the shared memory to be returned to an unused address list.

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